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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/032,906	12/28/2001	Steven M. Penn	TI-30544	9017
23494	7590	01/13/2004	EXAMINER	
TEXAS INSTRUMENTS INCORPORATED P O BOX 655474, M/S 3999 DALLAS, TX 75265			ALLEN, DENISE S	
			ART UNIT	PAPER NUMBER
			2872	

DATE MAILED: 01/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/032,906

Applicant(s)

PENN, STEVEN M.

Examiner

Denise S Allen

Art Unit

2872

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply.

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 October 2003.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 and 23-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 and 23-32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Drawings

The proposed drawing corrections were received on October 27, 2003. These drawing corrections are approved by the examiner.

In light of the Applicant's amendment to the drawings and the specification on October 27, 2003 (paper #9), the objections to the drawings in the Office Action on May 21, 2003 (paper #7) have been withdrawn.

Response to Amendment

In light of the Applicant's amendment to claim 18 and the cancellation of claims 21 and 22 on October 27, 2003 (paper #9), the objections to claims 18, 21, and 22 in the Office Action on May 21, 2003 (paper #7) have been withdrawn.

Response to Arguments

In the Applicant's response on October 27, 2003 (paper #9), the Applicant argues with respect to claims 1 and 17, that Ishii et al fails to teach or reasonably suggest using a total internal reflection prism to separate the filtered light from the first and second beams as recited in amended claims 1 and 17 (page 8). This argument has been fully considered and not found to be persuasive.

The Examiner respectfully disagrees with the Applicant's argument. Ishii et al teaches a total internal reflection prism (references 72 and 73) to separate the filtered light from the first and second beams.

Art Unit: 2872

The Applicant further argues with respect to claims 14 and 31, that Wang fails to teach or reasonably suggest the recycling integrator having a mirrored input aperture (pages 8 – 9). This argument has been fully considered and not found to be persuasive.

The Examiner respectfully disagrees with the Applicant's argument. In the previous Office Action, the Examiner identified reference 140 as the mirrored input aperture. The Applicant describes this structure as an optical reflector, which is inherently mirrored and functions as the input aperture to the solid integrating rod (reference 130).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 – 3, 5 – 7, 12, 16 – 19, 23, and 29 are rejected under 35 U.S.C. 102(b) as being anticipated by Ishii et al.

Regarding claims 1 and 17, Ishii et al teach an image display system (Figure 1) comprising: a light source (reference 1) for providing a beam of light along an illumination path; a sequential color filter (reference 13) on said illumination path for filtering said beam of light; a polarizing beam splitter (reference 70) on said illumination path for separating said filtered light beam into a first beam (reference a) having a first polarization state and a second beam (reference b) having a second polarization state; a first spatial light modulator (reference 12) receiving and selectively modulating said first beam; a second spatial light modulator (reference 12') receiving and selectively modulating said second beam; a total internal reflection prism

Art Unit: 2872

(references 72 and 73) on said illumination and projection path that separates the filtered light beam from the first and second beams; and at least one projection lens (reference 5) on a projection path for focusing said first and second beams on an image plane (reference 6).

Regarding claims 2 and 18, Ishii et al teach said polarizing beam splitter combining said modulated first and second light beams (reference c).

Regarding claims 3 and 19, Ishii et al teach said sequential color filter comprising a color wheel (Figure 4).

Regarding claim 5, Ishii et al teach at least one prism (reference 72) in said illumination and said projection paths for separating said filtered illumination light beam and said modulated light beam.

Regarding claim 6, Ishii et al teach a first prism (reference 72) in said illumination and said projection paths for separating said first beam directed to said first modulator and said modulated first beam from said first modulator; and a second prism (reference 73) in said illumination and said projection paths for separating said second beam directed to said second modulator and said modulated second beam from said second modulator.

Regarding claims 7 and 23, Ishii et al teach the modulated light from said first modulator (Figure 11 reference 118) passing through a first projection lens (reference 119) and light from said second modulator (reference 121) passing through a second projection lens (reference 122).

Regarding claims 12 and 29, Ishii et al teach the first modulator comprising a liquid crystal device (column 8 line 35).

Regarding claim 16, Ishii et al teach polarized eyewear for a viewer of said image display system (column 11 lines 47 – 48).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishii et al in view of Brennesholtz.

Ishii et al teaches an image display system as described above with a color wheel. Ishii et al does not teach a spiral color wheel.

Brennesholtz teaches a spiral color wheel (column 3 lines 56 – 62) used to sequentially filter colors in a projection system. It would have been obvious to one of ordinary skill in the art at the time of the invention to use the spiral color wheel of Brennesholtz in the image display system of Ishii et al in order to increase the efficiency of the image display system (Brennesholtz column 2 lines 9 – 15).

Claims 8 – 11 and 24 – 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishii et al in view of Gibbon et al.

Regarding claims 8 – 10 and 24 – 27, Ishii et al teaches an image display system as described above. Ishii et al does not teach said first and second modulators are positioned such that pixelated images from said first and second modulators are offset by approximately one-half pixel in both a horizontal direction and a vertical direction at said image plane.

Gibbon et al teaches two modulators positioned such that pixelated images from the modulators are offset by approximately one-half pixel in both horizontal and vertical directions

Art Unit: 2872

at said image plane (page 1 paragraph 0012). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the pixel arrangement of Gibbon et al in the image display system of Ishii et al in order to increase the image resolution (Gibbon paragraph 0012 lines 9 – 14).

Regarding claims 11 and 28, Ishii et al teaches an image display system as described above. Ishii et al does not teach the first modulator comprising a micromirror device.

Gibbon et al teaches an image display system with micromirror modulators (page 2 paragraph 0033). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the micromirror modulator of Gibbon et al in the image display system of Ishii et al in order to eliminate fixed pattern noise.

Claims 13 – 15 and 30 – 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishii et al in view of Wang.

Regarding claims 13 and 30, Ishii et al teaches an image display system as described above. Ishii et al does not teach a recycling integrator on said illumination path for homogenizing said light beam prior to said sequential color filter.

Wang teaches a display system (Figure 1 reference 100) with a recycling integrator (reference 130) on an illumination path for homogenizing a light beam (column 3 lines 51 – 55) prior to a sequential color filter (reference 120). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the recycling integrator of Wang in the image display system of Ishii et al in order to have uniform light illumination (Wang column 3 lines 51 – 53).

Art Unit: 2872

Regarding claims 14 and 31, Wang teaches the recycling integrator is a solid integrating rod (column 7 lines 36 – 44) having a mirrored input aperture (reference 140) (see Response to Arguments above).

Regarding claims 15 and 32, Wang teaches the recycling integrator is a hollow integrating rod (column 7 lines 36 – 44) having a mirrored input aperture (reference 140).

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Denise S Allen whose telephone number is (703) 305-7407. The examiner can normally be reached on Monday - Friday, 8:30am - 5:00pm.

Art Unit: 2872

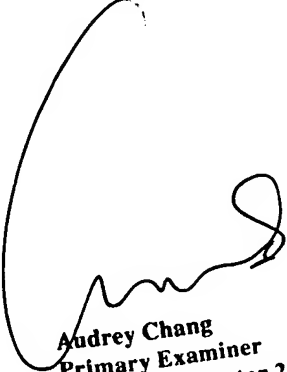
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew A Dunn can be reached on (703) 305-0024. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1782.

Please note that due to the organization where this application or proceeding is assigned relocating to the new USPTO offices in Alexandria, VA, the following new telephone numbers will be effective on January 21, 2004: Denise S. Allen (571) 272-2305 and Drew Dunn (571) 272-2312.


dsa

Denise S Allen
Examiner
Art Unit 2872


Audrey Chang
Primary Examiner
Technology Center 2800